

Demand Curves, Movements Along Demand Curves and Shifts in Demand Curves

Part A

Figure 9.1 shows the market demand for a hypothetical product: Greebes. Study the data, and plot the demand for Greebes on the axes in Figure 9.2. Label the demand curve D, and answer the questions that follow. Write the correct answer in the answer blanks or underline the correct words in parentheses.

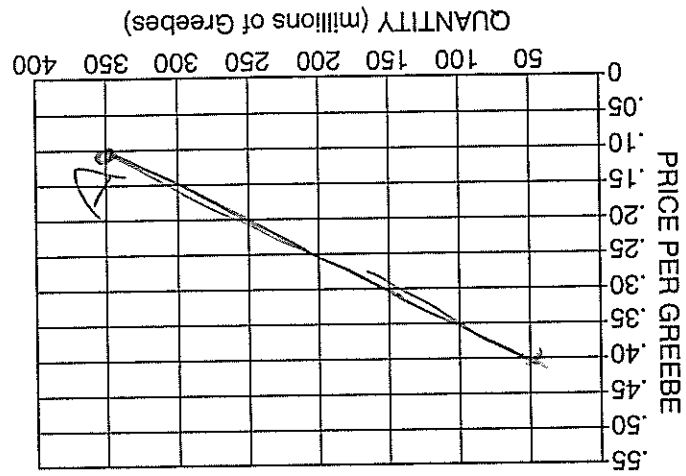
Figure 9.1

Demand for Greebes

Price (\$ per Greebe)	Quantity Demanded (millions of Greebes)
.10	350
.15	300
.20	250
.25	200
.30	150
.35	100
.40	50

Figure 9.2

Demand for Greebes



The data for demand curve D indicate that at a price of \$0.30 per Greebe, buyers would be willing to buy 150 million Greebes. Other things constant, if the price of Greebes increased to \$0.40 per Greebe, buyers would be willing to buy 50 million Greebes. Such a change would be a decrease in (demand / quantity demanded). Other things constant, if the price of Greebes decreased to \$0.20, buyers would be willing to buy 250 million Greebes. Such a change would be called an increase in (demand / quantity demanded).

ANSWER KEY

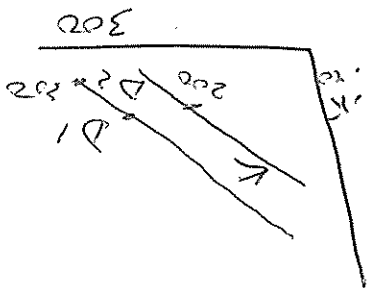
Now, let's suppose there is a dramatic change in federal income-tax rates that affects the disposable income of Greebe buyers. This change in the *ceteris paribus* (all else being equal) conditions underlying the original demand for Greebes will result in a new set of data, shown in Figure 9.3. Study these new data, and add the new demand curve for Greebes to the axes in Figure 9.2. Label the new demand curve D_1 and answer the questions that follow.



Figure 9.3

New Demand for Greebes

Price (\$ per Greebe)	Quantity Demanded (millions of Greebes)
.05	300
.10	250
.15	200
.20	150
.25	100
.30	50



Comparing the new demand curve (D_1) with the original demand curve (D), we can say that the change in the demand for Greebes results in a shift of the demand curve to the (left/right).

Such a shift indicates that at each of the possible prices shown, buyers are now willing to buy a (smaller/larger) quantity; and at each of the possible quantities shown, buyers are willing to offer a (higher/lower) maximum price. The cause of this demand curve shift was a(n) (increase/decrease) in tax rates that (increased/decreased) the disposable income of Greebe buyers.

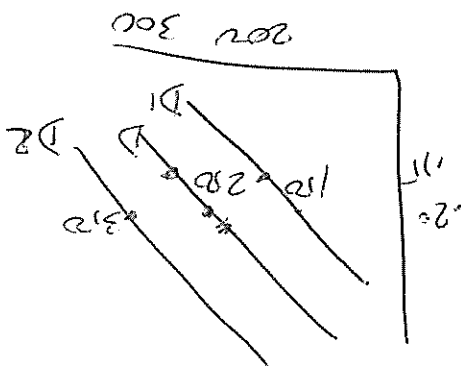
Now, let's suppose that there is a dramatic change in people's tastes and preferences for Greebes. This change in the *ceteris paribus* conditions underlying the original demand for Greebes will result in a new set of data, shown in Figure 9.4. Study these new data, and add the new demand curve for Greebes to the axes in Figure 9.2. Label the new demand curve D_2 and answer the questions that follow.



Figure 9.4

New Demand for Greebes

Price (\$ per Greebe)	Quantity Demanded (millions of Greebes)
.20	350
.25	300
.30	250
.35	200
.40	150
.45	100
.50	50



Comparing the new demand curve (D_2) with the original demand curve (D), we can say that the change in the demand for Greebes results in a shift of the demand curve to the (left/right).

Such a shift indicates that at each of the possible prices shown, buyers are now willing to buy a (smaller/larger) quantity; and at each of the possible quantities shown, buyers are willing to offer a (lower/higher) maximum price. The cause of this shift in the demand curve was a(n) (increase/decrease) in people's tastes and preferences for Greebes.

Part B

Now, to test your understanding, underline the answer you think is the one best alternative in each of the following multiple-choice questions.

- Other things constant, which of the following would *not* cause a change in the demand (shift in the demand curve) for mopeds?
 - A decrease in consumer incomes
 - A decrease in the price of mopeds
 - An increase in the price of bicycles
 - An increase in people's tastes and preferences for mopeds

- "Rising oil prices have caused a sharp decrease in the demand for oil." Speaking precisely, and using terms as they are defined by economists, choose the statement that best describes this quotation.
 - The quotation is correct: An increase in price always causes a decrease in demand.
 - The quotation is incorrect: An increase in price always causes an increase in demand, not a decrease in demand.
 - The quotation is incorrect: An increase in price causes a decrease in the quantity demanded, not a decrease in demand.
 - The quotation is incorrect: An increase in price causes an increase in the quantity demanded, not a decrease in demand.

- "As the price of domestic automobiles has inched upward, customers have found foreign autos to be a better bargain. Consequently, domestic auto sales have been decreasing, and foreign auto sales have been increasing." Using only the information in this quotation and assuming everything else constant, which of the following best describes this statement?
 - A shift in the demand curves for both domestic and foreign automobiles
 - A movement along the demand curves for both foreign and domestic automobiles
 - A movement along the demand curve for domestic autos, and a shift in the demand curve for foreign autos
 - A shift in the demand curve for domestic autos, and a movement along the demand curve for foreign autos

4. You hear a fellow student say: "Economic markets are like a perpetual see-saw. If demand rises, the price rises; if price rises, then demand will fall. If demand falls, price will fall; if price falls, demand will rise and so on forever." Dispel your friend's obvious confusion in no more than one short paragraph below.

Part C

Once we have the demand curve, we can define the concept of *consumer surplus*. Consumer surplus is the value received from the purchase of a good in excess of the price paid for it, or stated differently, the difference between the amount a person is willing and able to pay and the actual price paid for each unit.

An approximation of consumer surplus can be shown graphically as the area below the demand curve above the price paid. Redraw the first demand curve (D) from Figure 9.2 on Figure 9.5.

If the price for all the quantities sold is established at \$0.30, shade the area above \$0.30 up to the demand curve. This is the area of consumer surplus.

Continue to use the demand curve from Figure 9.2, and assume that the price is established at \$0.30. There are buyers who will benefit because they are willing and able to pay higher prices than the established price (\$0.30). For example, 50 million Greebes are demanded at \$0.40, but since the market price is \$0.30, there is a gain to the buyers represented by this 50 million. The gain is a total of \$5 million (\$0.10 x 50 million = \$5 million). The buyers of the next 50 million Greebes (always consider the extra or marginal buyers since the buyers at the higher prices will also be willing to buy at the lower price) are willing to pay \$0.35, providing a gain of \$0.05 of the consumer surplus, for a total of \$2.5 million.

No - 7.5 only
 applies if a consumer was willing
 to pay a price about the
 actual cost

9. Will there be any consumer surplus at a price of \$0.20 for the buyers willing and able to spend \$0.20, \$0.15 or \$0.10? Why or why not?

(E) What is the total surplus? 25

- (D) \$0.25 0.5 x 12
 (C) \$0.30 1 x 10
 (B) \$0.35 1.5 x 10
 (A) \$0.40 2 x 10

8. At \$0.20, calculate the consumer surplus for buyers willing to pay

7. If the equilibrium price drops to \$0.20, what will happen to consumer surplus? (Increase/Decrease)

6. If the price consumers pay increases, the shaded area (increases/decreases). If the price consumers pay decreases, the shaded area (increases/decreases).

5. Approximately what will be the total consumer surplus for the buyers of the 150 million Greebes at a price of \$0.30? 0

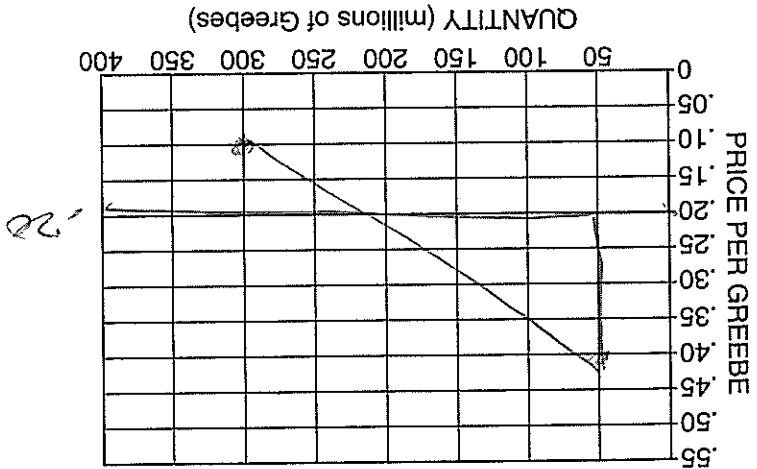


Figure 9.5 Consumer Surplus

Figure 9.5

is, demand is short

(continued)

Reasons for Changes in Demand

Part A

Read the eight newspaper headlines in Figure 10.2, and use the table to record the impact, if any, of each event on the demand for beef. Use the first column to the right of the headline to show whether the event causes a change in demand. Use the next column to record whether the change is an increase or a decrease in demand. In the third column, decide whether the demand curve shifts left or right. Finally, write the letter for the new demand curve. Use Figure 10.1 to help you. Always start at curve B, and move only one curve at a time. One headline implies that the demand for beef does not change.

Figure 10.1

Beef Consumption in May

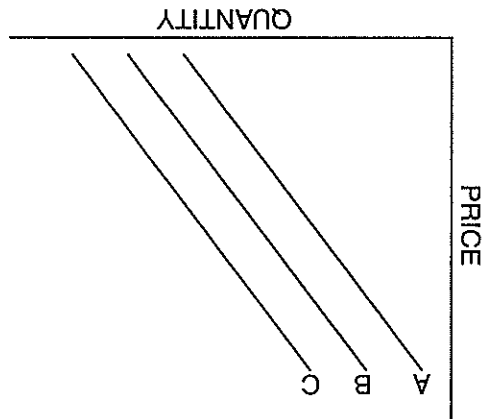



Figure 10.2

Headline	Demand Shift? (Y/N)	If Demand Shifts, Inc/Dec?	New Curve Shifts Left/Right?
1. Price of Beef to Rise in June	Y	Inc	Left
2. Millions of Immigrants Swell U.S. Population	Y	Inc	Right
3. Pork Prices Drop	Y	Dec	Left
4. Surgeon General Warns That Eating Beef Is Hazardous to Health	Y	Dec	Left
5. Beef Prices Fall; Consumers Buy More	Y	Dec	Left
6. Real Income for U.S. Drops for Third Month	Y	Dec	Left
7. Charcoal Shortage Threatens Memorial Day Cookouts	Y	Dec	Left
8. Nationwide Fad: The Disco-Burger	Y	Inc	Right

Based on an activity from *Master Curriculum Guide in Economics: Teaching Strategies for High School Economics Courses* (New York: National Council on Economic Education, 1985), p. 68.

Part B

Categorize each change in demand in Part A according to the reason why demand changed. A given demand curve assumes that consumer expectations, consumer tastes, the number of consumers in the market, the income of consumers, and the prices of substitutes and complements are unchanged. In the table below, place an X next to the reason that the event described in the headline caused a change in demand. One headline will have no answer because it is a change in quantity demanded.

 Figure 10.3

Reason ↑	Headline Number →	A change in consumer expectations	A change in consumer tastes	A change in the number of consumers in the market	A change in income	A change in the price of a substitute good	A change in the price of a complementary good
8							
7							X
6					X		
5			X				
4						X	
3				X			
2							
1	X						

Supply Curves, Movements Along Supply Curves and Shifts in Supply Curves

In this activity and those that follow, we will assume that the long-run supply curve of Greebes is typically upward sloping.

Part A

Study the data in Figure 12.1 and plot the supply of Greebes on the axes in Figure 12.2. Label the supply curve S and answer the questions that follow. Write the correct answer on the answer blank, or underline the correct answer in parentheses.



Figure 12.1

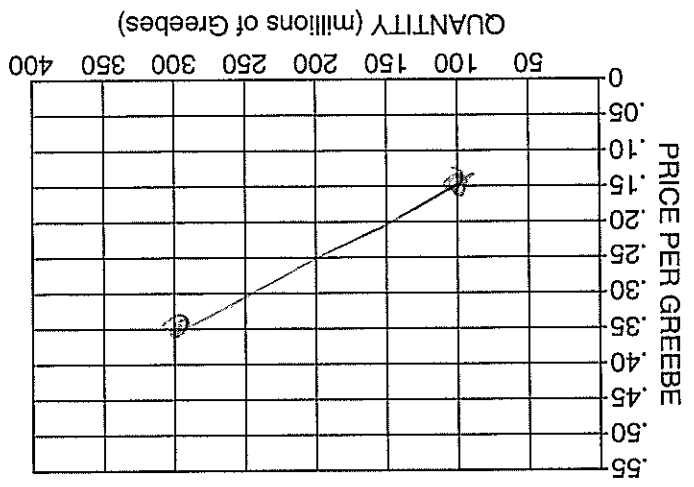
Supply of Greebes

Price (\$ per Greebe)	Quantity Supplied (millions of Greebes)
\$.15	100
.20	150
.25	200
.30	250
.35	300



Figure 12.2

Supply of Greebes



The data for supply curve S indicate that at a price of \$0.25 per Greebe, suppliers would be willing to offer 200 million Greebes. Other things constant, if the price of Greebes increased to \$0.30 per Greebe, suppliers would be willing to offer _____ million Greebes. Such a change would be an increase in (supply / quantity supplied)

Adapted from Phillip Saunders, *Introduction to Microeconomics: Student Workbook*, 18th ed. (Bloomington, Ind., 1998). Copyright © 1998 Phillip Saunders. All rights reserved.

Other things constant, if the price of Greebes decreased to \$0.20 per Greebe, suppliers would be willing to offer 150 million Greebes. Such a change would be called a decrease in (supply / quantity supplied).

Now, let's suppose that there is a dramatic change in the price of several of the raw materials used in making Greebes. This change in the *ceteris paribus* conditions underlying the original supply of Greebes will result in a new set of data, such as that shown in Figure 12.3. Study the data, and plot this supply of Greebes on the axes in Figure 12.2. Label the new supply curve S_1 and answer the questions that follow.

Price (\$ per Greebe)	Quantity Supplied (millions of Greebes)
.40	250
.35	200
.30	150
.25	100
.20	50

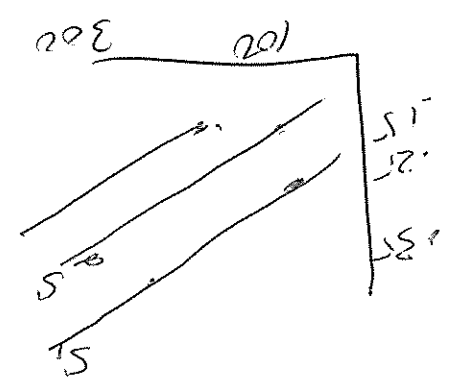


Figure 12.3
New Supply of Greebes

Comparing the new supply curve (S_1) with the original supply curve (S), we can say that a change in the supply of Greebes results in a shift of the supply curve to the (left / right). Such a shift indicates that at each of the possible prices shown, suppliers are now willing to offer a (smaller / larger) quantity; and at each of the possible quantities shown, suppliers are willing to accept a (higher / lower) minimum price. The cause of this supply curve shift was a(n) (increase / decrease) in prices of several of the raw materials used in making Greebes.

Now, let's suppose that there is a dramatic change in the price of Silopanna, a resource used in the production of Greebes. This change in the *ceteris paribus* conditions underlying the original supply of Greebes will result in a new set of data shown in Figure 12.4. Study the data, and plot this supply of Greebes on the axes in Figure 12.2. Label the new supply curve S_2 and answer the questions that follow.

Price (\$ per Greebe)	Quantity Supplied (millions of Greebes)
.30	350
.25	300
.20	250
.15	200
.10	150

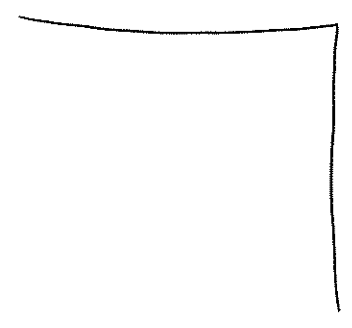


Figure 12.4
New Supply of Greebes

Comparing the new supply curve (S_2) with the original supply curve (S), we can say that the change in the supply of Greebes results in a shift of the supply curve to the (left / right). Such a shift indicates that at each of the possible prices shown, suppliers are now willing to offer a (smaller / larger) quantity;

and at each of the possible quantities shown, suppliers are willing to accept a (lower/higher) minimum price. The cause of this supply curve shift is a(n) (increase/decrease) in the price of Siloppanna, a resource used in the production of Greebes.

Part B

Now, to check your understanding, underline the answer you think is the one best alternative in each of the following multiple-choice questions.

- Other things constant, which of the following would *not* cause a change in the long-run supply of beef?
 - A decrease in the price of beef
 - A decrease in the price of cattle feed
 - An increase in the price of cattle feed
 - An increase in the cost of transporting cattle to market

- "Falling oil prices have caused a sharp decrease in the supply of oil." Speaking precisely, and using terms as they are defined by economists, choose the statement that best describes this quotation.
 - The quotation is correct: A decrease in price always causes a decrease in supply.
 - The quotation is incorrect: A decrease in price always causes an increase in supply, not a decrease in supply.
 - The quotation is incorrect: A decrease in price causes an increase in the quantity supplied, not a decrease in supply.
 - The quotation is incorrect: A decrease in price causes a decrease in the quantity supplied, not a decrease in supply.

- You overhear a fellow student say: "Economic markets are like a slide: If supply increases, the price increases; if the price increases, then supply will fall. If supply falls, the price will rise; if the price increases, supply will increase and so on forever." Dispel your friend's obvious confusion (in no more than one short paragraph) below.

Price changes cause suppliers to either increase/decrease the amount they supply to the market.

Part C

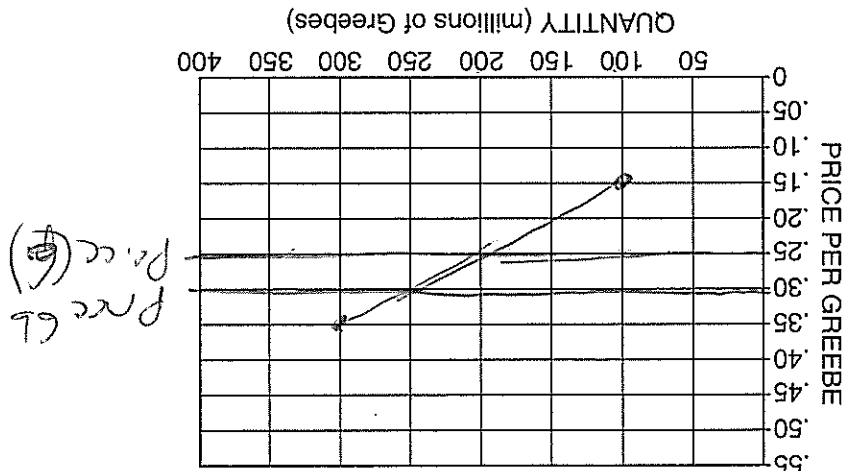
Once we have the supply curve, we can define the concept of *producer surplus*. Producer surplus is the amount a seller is paid minus the seller's cost. An approximation of producer surplus can be shown graphically as the area below the equilibrium price and above the supply curve.

- Redraw the first supply curve (S) from Figure 12.2 on Figure 12.5. If the price for all the quantities sold is established at \$0.30, shade the area below \$0.30 down to the supply curve. This is the area of producer surplus.



Figure 12.5

Producer Surplus



5. Underline the correct answer in parentheses for these questions and for similar questions below.

- (A) If the equilibrium price increases, the shaded area (increases) (decreases).
 (B) If the equilibrium price decreases, the shaded area (increases) (decreases).

6. Continue to use the supply curve from Figure 12.2 and assume that the selling price is established at \$0.25. There are producers who will benefit because some are willing to offer Greebes for a price lower than the established price (\$0.25). For example, 100 million Greebes are supplied at \$0.15, but since the market price is \$0.25, producer surplus for the first 100 million will be \$10 million: (\$0.25 - \$0.15) x 100. Sellers of the next 50 million Greebes (always consider the extra or marginal sellers since the sellers at the lower prices will also be willing to sell at the higher price) are willing to sell Greebes for \$0.20, providing a gain of \$0.05 for each, resulting in a producer surplus of \$2.5 million.

(A) Approximately what will be the total producer surplus for the sellers if the price is \$0.25?

(B) If a seller's price were to increase to \$0.30, what will happen to producer surplus?

(Increase/Decrease)

(C) Calculate the producer surplus for sellers willing to offer

\$0.15	$.15 \times 100$	15
\$0.20	$.10 \times 50$	5
\$0.25	$.05 \times 50$	2.5
\$0.30		22.12

What is the total surplus?

Reasons for Changes in Supply

Part A

Read the eight newspaper headlines in Figure 13.2, and record the impact, if any, of each event on the supply of cars. Use the first column to the right of the headline to show whether the event will cause a change in supply. Use the next column to record whether the change is an increase or a decrease in supply. In the third column, decide whether the supply curve shifts left or right. Finally, write the letter for the new supply curve. Use Figure 13.1 to help you. Always start at curve B, and move only one curve at a time. Two headlines imply that the supply of cars does not change.

Figure 13.1
Supply of Foreign and Domestic Cars

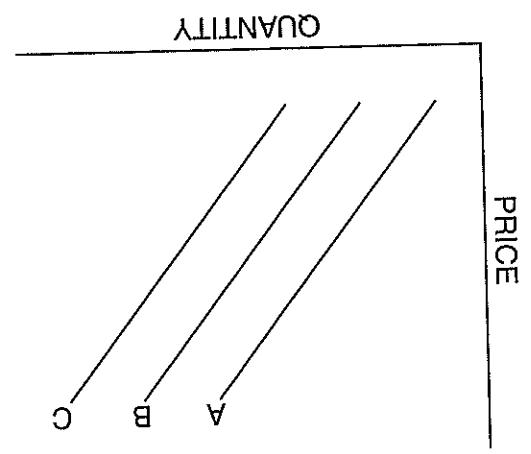


Figure 13.2

Headline	Supply Shift? (Y/N)	If Supply Shifts, Inc/Dec?	Curve Shifts Left/Right?	New Curve
1. Auto Workers' Union Agrees to Wage Cuts	Y	I	R	C
2. New Robot Technology Increases Efficiency	Y	I	R	C
3. Nationwide Auto Strike Began at Midnight	Y	D	L	A
4. New Import Quotas Reduce Foreign Car Imports	Y	I	R	C
5. Cost of Steel Rises	Y	D	L	A
6. Auto Producer Goes Bankrupt; Closes Operation	Y	D	L	A
7. Buyers Reject New Models	N			
8. National Income Rises 2%	Y	I	R	C

Part B

Categorize each change in supply in Part A according to the reason why supply changed. In Figure 13.3, place an X next to the reason that the headline indicated a change in supply. In some cases, more than one headline could be matched to a reason. Two headlines do not indicate a shift in supply.

Figure 13.3

Reason →	Headline Number →	1	2	3	4	5	6	7	8
A change in costs of inputs to production		X							
A change in technology			X						
A change in the number of producers in the market							X		
Government policies					X				

Equilibrium Price and Equilibrium Quantity

Figure 14.1 below shows the demand for Greebes and the supply of Greebes. Plot these data on the axes in Figure 14.2. Label the demand curve D and label the supply curve S. Then answer the questions that follow. Fill in the answer blanks, or underline the correct answer in parentheses.



Figure 14.1

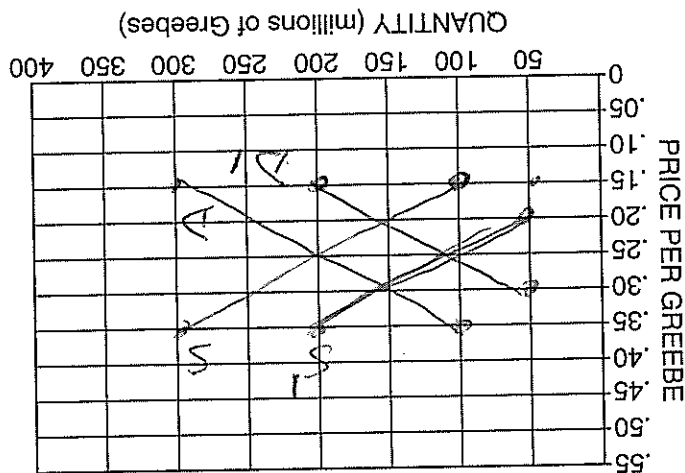
Demand for and Supply of Greebes

Price (\$ per Greebe)	Quantity Demanded (millions of Greebes)	Quantity Supplied (millions of Greebes)
\$.15	300	100
.20	250	150
.25	200	200
.30	150	250
.35	100	300



Figure 14.2

Demand for and Supply of Greebes



- Under these conditions, competitive market forces would tend to establish an equilibrium price of 25 per Greebe and an equilibrium quantity of 200 million Greebes.

- If the price currently prevailing in the market is \$0.30 per Greebe, buyers would want to buy 150 million Greebes and sellers would want to sell 250 million Greebes. Under these conditions, there would be a (shortage / surplus) of 100 million Greebes. Competitive market forces would tend to cause the price to (increase / decrease) to a price of 21 per Greebe. At this new price, buyers would now want to buy 200 million Greebes, and sellers now want to sell 200 million Greebes. Because of this change in (price / underlying conditions), the

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Compared with the consumer and producer surpluses in Question 4, consumer surplus has (increased/decreased), and producer surplus has (increased/decreased).

Compared with the equilibrium price in Question 1, we say that because of this change in (price/underlying conditions), the (supply/quantity supplied) changed; and both the equilibrium (price/quantity) and the equilibrium quantity (increased/decreased).

Plot the new supply schedule on the axes in Figure 14.2 and label it S_1 . Label the new equilibrium E_1 . Under these conditions, competitive market forces would tend to establish an equilibrium price of 30 per Greebe and an equilibrium quantity of 150 million Greebes.

Price (\$ per Greebe)	Quantity Supplied (millions of Greebes)
\$.20	50
.25	100
.30	150
.35	200

Figure 14.3
New Supply of Greebes

following:

5. Now, suppose a mysterious blight causes the supply schedule for Greebes to change to the

(B) What does this say about the market system?

- perfect env

(A) If the government sets the price at \$.35 and the quantity exchanged is 100 million Greebes, what will happen to the size of the combined total of consumer and producer surplus?

Shrink by 100x.45

4. Lightly shade the area of consumer surplus and producer surplus.

3. If the price currently prevailing in the market is \$.20 per Greebe, buyers would want to buy 200 million Greebes, and sellers would want to sell 100 million Greebes. Under these conditions, there would be a (shortage/surplus) of 100 million Greebes. Competitive market forces would tend to cause the price to (increase/decrease) to a price of 25 per Greebe. At this new price, buyers would now want to buy 200 million Greebes, and sellers now want to sell 200 million Greebes. Because of this change in (price/underlying conditions), the (demand/quantity demanded) changed by 100 million Greebes, and the (supply/quantity supplied) changed by 100 million Greebes.

(demand/quantity demanded) changed by 50 million Greebes, and the (supply/quantity supplied) changed by 30 million Greebes.

6. Now, with the supply schedule at S_1 , suppose further that a sharp drop in people's incomes as the result of a prolonged recession causes the demand schedule to change to the following:



Figure 14.4

New Demand for Greebes

Price (\$ per Greebe)	Quantity Demanded (millions of Greebes)
\$.15	200
.20	150
.25	100
.30	50

Plot the new demand schedule on the axes in Figure 14.2 and label it D_1 . Label the new equilibrium E_2 . Under these conditions, with the supply schedule at S_1 , competitive market forces would tend to establish an equilibrium price of 25 per Greebe and an equilibrium quantity of 100 million Greebes. Compared with the equilibrium price in Question 5, because of this change in (price / underlying conditions), the (demand / quantity demanded) changed. The equilibrium price (*increased / decreased*) and the equilibrium quantity (*increased / decreased*).

Dec.

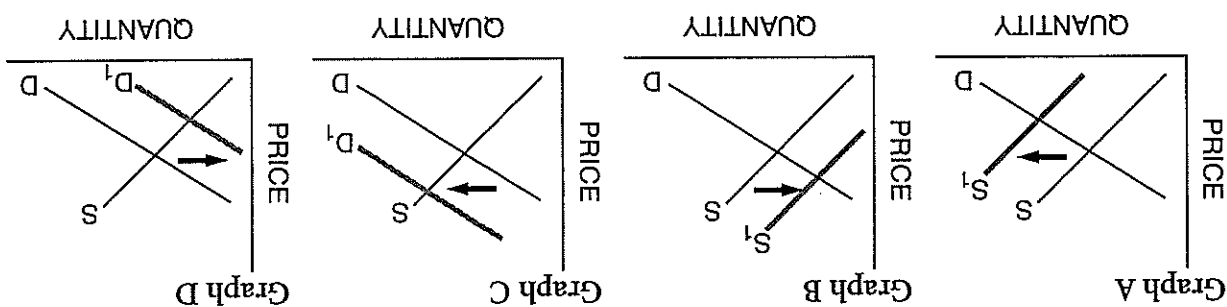
Shifts in Supply and Demand

Part A

Fill in the blanks with the letter of the graph that illustrates each situation. You may use a graph more than once.

Figure 15.1

Jelly Beans Supply and Demand



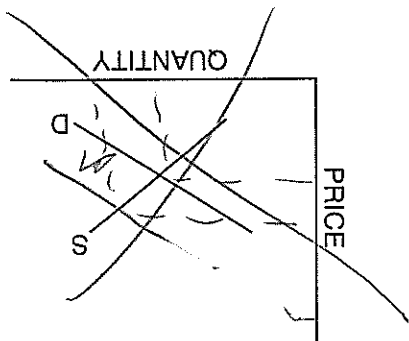
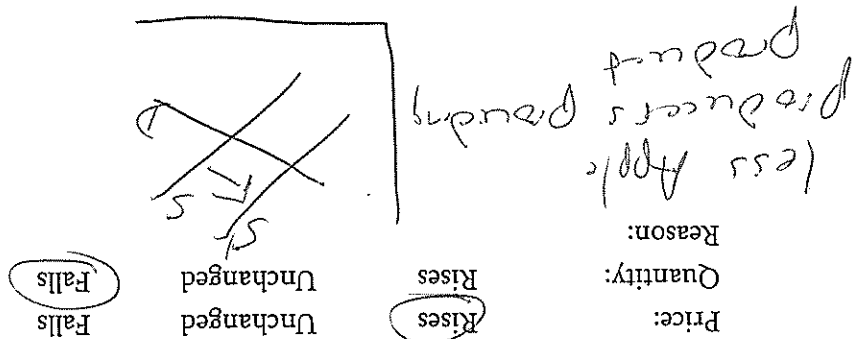
1. The price of sugar increases. B
2. The price of bubble gum, a close substitute for jelly beans, increases. C
3. A machine is invented that makes jelly beans at a lower cost. A
4. The government places a tax on foreign jelly beans, which have a considerable share of the market. D
5. The price of soda, a complementary good for jelly beans, increases. D
6. Widespread prosperity allows people to buy more jelly beans. C

Activity written by Margaret Hamilton, Canton Country Day School, Canton, Ohio; Mary Kobellis, Brooke High School, Wellburg, W. Va.; John Morton, National Council on Economic Education, New York, N.Y., and Francis Vottero, Shamokin Area High School, Shamokin, Pa. Part B adapted from G. Yohe, *Instructor's Resource Manual for Samuelson and Nordhaus Economics*, 14th ed. (New York: McGraw Hill College Division, 1992), p. 16.

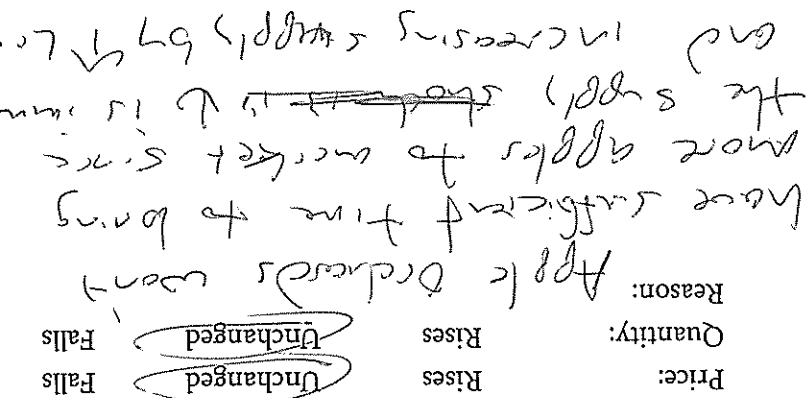
Part B

Connecticut ships large amounts of apples to all parts of the United States by rail. Circle the words that show the effects on price and quantity for each situation, and complete the graphs below, showing how a hurricane that destroys apples before they are picked in Connecticut might affect the price and quantity of each commodity. Then provide your reasoning.

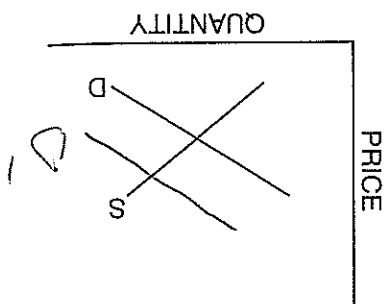
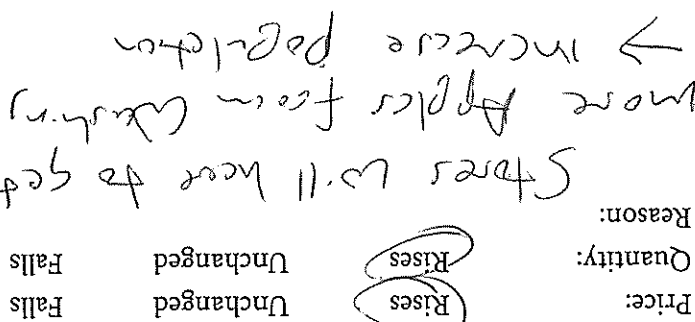
7. Apples in Boston



8. Land devoted to apple orchards in the state of Washington



9. Apples grown in the state of Washington



10. Pears

Price: Rises
Quantity: Rises
Reason:

Unchanged
Unchanged
Falls

Pears substitute for Apple
if Price Apples increases

Some consumers will switch to Apples

11. Apple pies

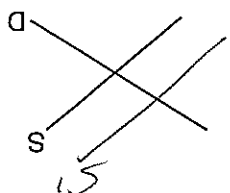
Price: Rises
Quantity: Rises
Reason:

Unchanged
Unchanged
Falls

Ingredient Price ↑ Price
shift in supply ↓

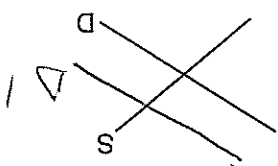
PRICE

QUANTITY



PRICE

QUANTITY



How Markets Allocate Resources

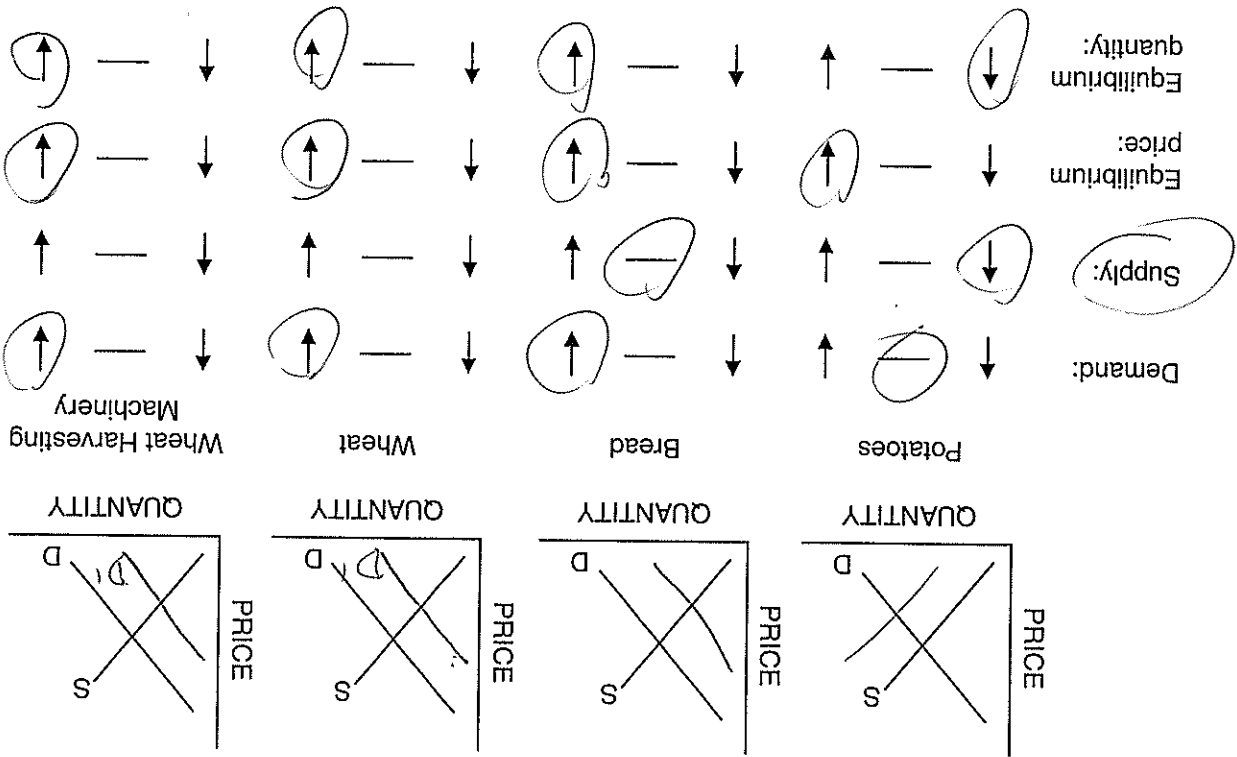
The following questions refer to a group of related markets in the United States during a long period of time. Assume that the markets are perfectly competitive and that the supply and demand model is completely applicable. The figures show the effects of the assumed change, *other things constant*. Work your way from left to right. Shift only one curve in each market. For each market, draw whatever new supply or demand curves are needed, labeling each new curve S_1 or D_1 . Then circle the correct symbol under each diagram (\uparrow for increase, — for unchanged, and \downarrow for decrease). Remember to shift only one curve in each market.

1. Assume that a new fertilizer dramatically increases the number of potatoes that can be harvested with no additional labor or machinery. Also assume that this fertilizer does not affect wheat farming and that people are satisfied to eat either potatoes or bread made from wheat flour.



Figure 16.1

Effects of a New Fertilizer



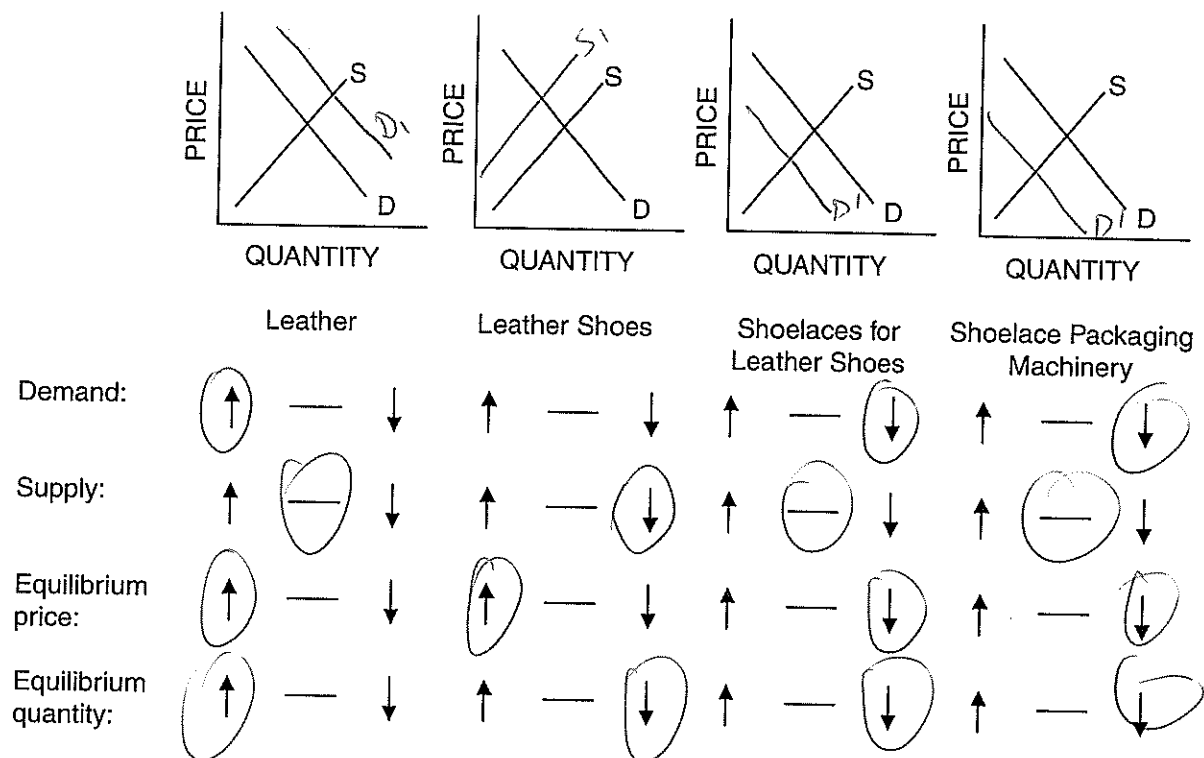
Adapted from Phillip Saunders, *Introduction to Microeconomics: Student Workbook*, 18th ed. (Bloomington, Ind., 1998). Copyright © 1998 Phillip Saunders. All rights reserved.

2. Assume people's tastes change and there is an increase in the demand for briefcases and luggage made of leather. How would this affect the leather market and related markets? Draw the new curves and circle the appropriate symbols in all four markets.



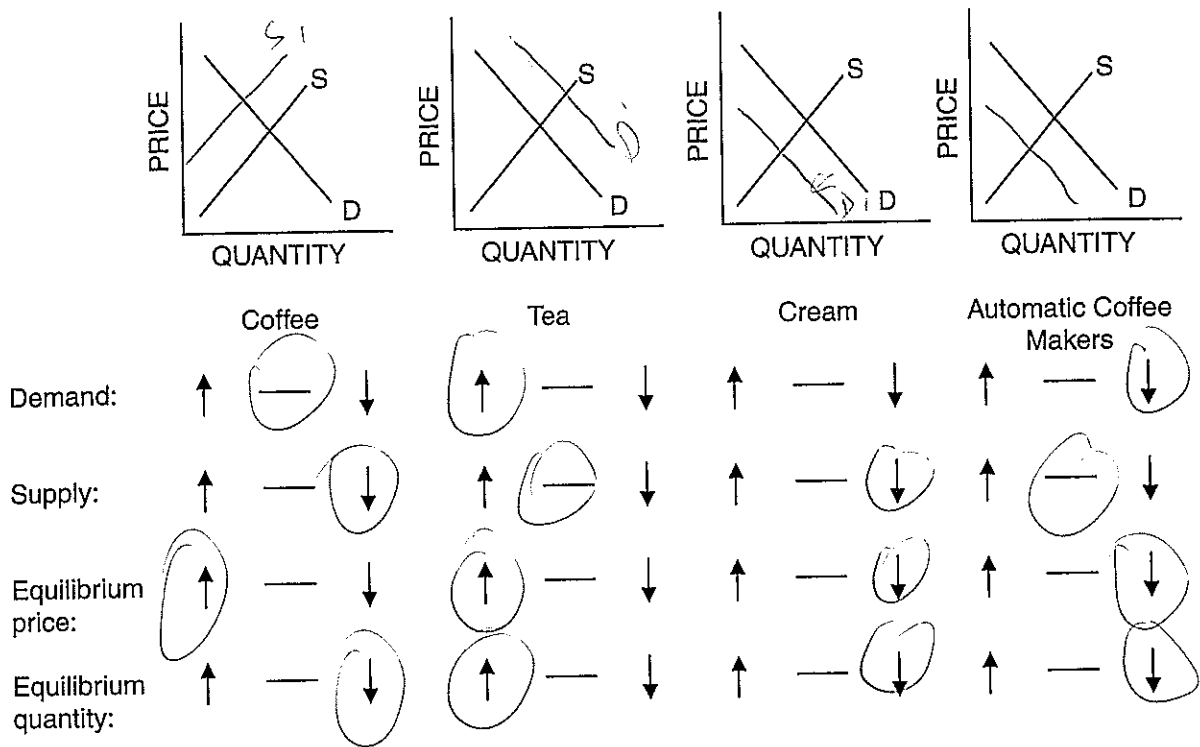
Figure 16.2

Effects of Increased Demand for Briefcases and Luggage



3. Assume that a heavy frost destroys half the world's coffee crop and that people use more cream in coffee than they do in tea.

* Figure 16.3
Effects of a Loss of Coffee Crop



4. Assume people's tastes change in favor of colored sports shirts, which are worn without neckties, and against white dress shirts, which are worn with neckties and tie clasps.



Figure 16.4
Effects of a Shift to Sports Shirts

